
Abstract

Objective To investigate the effect of a topical anaesthetic formulation on pain alleviation, wound healing and systemic levels of local anaesthetic actives in lambs undergoing castration and tail docking.

Design Three placebo-controlled and/or randomised experiments were conducted using three groups of Merino lambs (n = 62, 68 and 19) undergoing routine castration and tail docking.

Procedure Surgical castration, with either surgical or hot-iron tail docking, was performed with and without the application of topical anaesthetic (Tri-Solfen®) or placebo. The effects of this procedure were compared with those of rubber ring castration and tail docking, and of the handled but unmarked controls. Wound pain was assessed using calibrated Von-Frey monofilaments over a 4-h period, pain-related behaviour was assessed over 5 h, wound healing was assessed at 14 and 28 days, and the plasma levels of lignocaine and bupivacaine were determined.

Results Rapid and up to 4 h primary hyperalgesia developed following surgical castration and tail docking in the untreated and placebo-treated lambs. It was absent in the castration wounds, and significantly reduced in the tail-docking wounds, of the treated lambs. Hot-iron docking was associated with mild and transient secondary hyperalgesia, which was abolished by the topical anaesthesia. There was a significant reduction in pain-related behaviours in treated lambs, which were not significantly different in their behaviour to the sham-operation handled controls. Plasma lignocaine and bupivacaine levels were below the toxic thresholds in all tested lambs.

Conclusion Topical anaesthesia alleviates wound pain and significantly reduces pain-related behaviours in lambs undergoing surgical castration plus surgical or hot-iron tail docking, without a negative effect on wound healing or a risk of systemic toxicity.